DOCUMENT RESUME

ED 255 015 EC 172 074

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TITLE Referential Communicative Effectiveness of Learning Disabled Children.
PUB DATE Oct 84
NOTE 25p.; Paper presented at the Conference of the Northeastern Educational Research Association (Ellenville, NY, October 24-26, 1984).
PUB TYPE Speeches/Conference Papers (150) -- Reports - Research/Technical (143)

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS *Communication Skills; Elementary Education; *Learning Disabilities; *Metacognition
IDENTIFIERS *Referential Communication

ABSTRACT

The effect of both age and task variables on the referential communicative effectiveness of 60 learning disabled elementary school children was investigated. The importance of metacognitive factors, in this case spontaneous comparison activities, in accounting for learning disabled children's communication difficulties was also examined. Ss were given two tests of dissimilar and similar word-pairs with one word in each pair designated as the referent. They were asked to communicate a single word clue that would enable a listener to identify the referent. Findings of the study indicated that the learning disabled children were effective in communicating the dissimilar word-pair referents, requiring only sampling activities. However, on the similar word-pair task, requiring both sampling and comparison activities, their performance showed no significant improvement with age. Results of the study indicated that metacognitive factors appear to play an important role in the development of referential communicative effectiveness among learning disabled children. (Author/CL)

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Referential Communicative Effectiveness of Learning Disabled Children

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Running Head: REFERENTIAL COMMUNICATIVE EFFECTIVENESS

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Abstract

The effect of both age and task variables on the referential communicative effectiveness of learning disabled elementary school children was investigated. The importance of metacognitive factors, in this case spontaneous comparison activities, in accounting for learning disabled children's communication difficulties was also examined. Sixty learning disabled children in grades two through six were given two tests of dissimilar and similar word-pairs with one word in each pair designated as the referent. They were asked to communicate a single word clue that would enable a listener to identify the referent. Findings of the study indicated that the learning disabled children were effective in communicating the dissimilar word-pair referents, requiring only sampling activities. However, on the similar word-pair task, requiring both sampling and comparison activities, their performance showed no significant improvement with age. Results of the study indicated that metacognitive factors appear to play an important role in the development of referential communicative effectiveness among learning disabled children.

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Referential Communicative Effectiveness of Learning Disabled Children

Children with specific learning disabilities show deficits in one or more of the processes basic to normal efficient learning. Current research has indicated that many learning disabled children experience problems in acquiring language and come to use language less effectively than normal learners do (Wiig & Semel, 1980). It has also been suggested that referential communication, the ability to describe an object or event in such a way that a listener is able to identify it, is a critical aspect of the total communication process (Glucksberg et al., 1975). Therefore, deficits in referential communication accuracy may contribute to the learning disabled child's communication problems.

In addition, there is a body of research drawing on theoretical and empirical work in cognitive development (Flavell, 1977) that has emphasized performance deficits in learning disabled children (Meichenbaum, 1977; Torgesen, 1977; Reid & Hresko, 1981; Baker, 1982). These researchers have contended that failure on certain tasks on the part of the learning disabled child is caused by the child's lack of effective metacognitive strategies. They have maintained that

learning disabled children lack awareness of their own cognitive processes relative to the demands of a task. It has also been suggested that learning disabled children's poorer task performance reflects what Flavell (1977) terms a "production deficiency." This production or performance deficit describes children's failure to use a cognitive strategy spontaneously when a situation calls for it, even though they could use that strategy effectively if directed to do so by someone else.

Against this background, the present study was designed to assess the effect of both age and task variables on the referential communicative performance of learning disabled children. The present research also examined the role that metacognitive factors play in learning disabled children's referential communication accuracy.

Within the last two decades, the development of children's referential communication skills has interested a number of researchers (Feffer & Suchotliff, 1966; Flavell et al., 1968; Rosenberg & Cohen, 1966; Glucksberg et al., 1975; Asher & Parke, 1975). In general, the paradigm developed to examine the processes which contribute to communication effectiveness has consisted of a speaker who is asked to communicate a specific referent to a listener. The speaker's ability to communicate the referent is then assessed.

An example of this paradigm is a task used by Rosenberg and Cohen (1966) where the speaker and listener have a series

of word pairs, but only the speaker has the referent word underlined. The speaker communicates a single word clue to the listener who must select the referent within each pair. Data from these studies indicated that the ability to communicate a referent to a listener improves with age. Rosenberg and Cohen (1966) proposed that two separate processes contribute to the development of communication effectiveness. They contended that both sampling and comparison processes are involved in the development of referential communication.

The Rosenberg and Cohen (1966) two-stage model appears to identify the skills which children must develop in order to communicate effectively. The sampling stage suggests the relevance of vocabulary growth. The comparison stage suggests the importance of children's ability to spontaneously use an effective cognitive strategy, in this case, a comparison of the associative values of potential responses to both the referent and non-referent in order to select the responses that are more strongly associated with the referent.

In a study conducted by Cohen and Klein (1968), the Rosenberg and Cohen (1966) similar word-pair task was used with 240 third, fifth and seventh grade children. All children who were failing their school work or had reading or speech difficulties were excluded from the study. The results indicated that accuracy increased as grade level increased and that third graders produced significantly fewer correct referent choices than either the fifth or seventh graders. Cohen and Klein (1968) concluded that the results

favored a sampling interpretation and suggested that older children used their greater knowledge of vocabulary and had more shared word associations.

However, a series of studies reported by Asher and Parker (1975) with second, fourth and sixth grade children looked at both sampling and comparison activities in communicative effectiveness. They used both dissimilar and similar word-pair tasks and found that none of the age differences on dissimilar word pairs were significant. Whereas, on similar word pairs their data indicated that accuracy increased and that sixth graders made significantly more correct referent choices than second graders. They concluded that while younger children are able to use a sampling process, they were not adequately engaging in comparison activities. Their findings, therefore, supported a comparison rather than sampling explanation for the observed age differences in performance for a referential communication task.

The present study was designed to separate sampling processes and comparison activities in the development of referential communication ability in learning disabled children. Two questions guided the inquiry:

1. Does the performance of learning disabled children on two referential word-pair tasks differ from the performance reported for normally achieving children?

2. Are metacognitive factors implicated in learning disabled children's performance on a referential communication task?

Method

Subjects

Subjects consisted of sixty (60) elementary age students in attendance at a university learning disabilities clinic serving a predominantly suburban, white, middle-class population. Subjects were selected from those children in grades two through six who had previously been identified as learning disabled by their school districts according to New York State definition and selection guidelines (i.e., all students had a full scale I.Q. above 85 and were achieving two or more years below expected grade level in one or more academic areas) and were receiving special education services in their home schools. Children with obvious physical defects or suspected emotional handicaps, or who had been retained in a grade, were excluded from the pool. Twelve (12) children were selected in each grade. Slosson Intelligence Test data indicated a mean I.Q. of 105.0 and no significant differences between grade levels. Students' chronological ages were between 84 and 153 months.

Description of Instrument

The testing instrument was adapted from the Cohen and Klein (1968) study and incorporated by Asher and Parke (1975)

in their study on referential communication. Word-pair cards were developed with the referent word underlined. There were fifteen (15) pairs of dissimilar words and an additional set of fifteen (15) similar word pairs. The thirty (30) word pairs were mounted individually on 5 X 8 white index cards. Table 1 represents the word pairs used to assess the communication abilities of the learning disabled subjects.

Insert Table 1 about here

Procedure

The procedure consisted of two phases: a) the speaker phase, during which the children generated clues, and b) a listener phase, in which adults were asked to choose the correct referent from each word pair on the basis of children-generated clues.

Speaker Phase: Each subject was escorted into a testing room by the examiner. The child was seated at a desk alongside of the examiner. An empty chair was placed across the room.

The examiner spoke briefly, but pleasantly, with each subject before beginning the test. After rapport had been established, the experimenter gave the following instructions:

Now, _____ (the child's name), we are going to play a game. (The experimenter shows a sample card to the child.) Here we have two words printed on this card. One of the words has a line under it. This is the word that you are thinking of.

Let's pretend that there is a person sitting in that empty chair. (The examiner points to the empty chair.) The person sees the same two words, but he does not know which word is the underlined word. So he does not know which word you are thinking of. Your job will be to give him a hint, or clue, that will help him guess which word is underlined. (The experimenter asks the child if he understands the meaning of "hint" or "clue." If the child does not, the experimenter explains the meaning.) The clue has to be one word and it cannot rhyme with the underlined word. Remember that the other person sees both words but does not know which of the two words is the underlined word. You want him to guess the underlined word from your clue. Let's practice with this card.

The "house - tomato" word pair served as the sample card. The child was asked to give a clue word. If an inappropriate clue was given, the experimenter questioned the subject as to his selection. If the subject had an appropriate reason for using a particular one-word clue, the experimenter could assume that the individual understood the instructions, otherwise the instructions were repeated until the child could deliver an acceptable clue. Following instructions, the child produced a response for all thirty (30) word pairs. The experimenter read aloud the word pairs to ensure understanding. The responses were recorded on a separate response sheet. Both the dissimilar word-pair and the similar word-pair sets were administered during the same testing session.

Listener Phase: Sixty (60) college students enrolled in two introductory special education courses were presented with the list of word pairs and the clues generated by one speaker. Listeners read the following instructions:

> On the next two pages there are a series of word pairs. With each word pair there is a clue. Underline the word in each pair that you think the clue refers to. The clues were given by elementary school children. If you are not sure which word to pick, try to make a good guess. Don't leave any blank.

Scoring

Each speaker received a score based on the number of correct listener referent identifications. The scores could range between 0 and 15 for each type of word-pair.

Results

For each subject communicative competence on both referential word-pair tasks was defined as the number of correct listener's choices of the speaker's referent. Since there were 15 trials for both the dissimilar and similar word-pair tasks, chance performance would yield an accuracy score of 7.5 (50 percent correct) and perfect performance would score 15 (100 percent correct). Table 2 presents the average accuracy scores for each grade level on the two referential word-pair tasks.

Insert Table 2 about here

Inspection of the table indicates that at each grade level children performed well on the dissimilar word-pairs. For the similar word pair task, there was improvement with age with the sixth graders producing the most correct referent choices.

The results of an analysis of variance, however, were not wholly consistent with these conclusions. For the dissimilar word-pair task, the effect of grade level was statistically significant ($F = 3.0$, $df = 4$, $p < .02$) and no significant effects were demonstrated for sex or for the interaction of grade level and sex. Duncan's (Kirk, 1968) multiple comparison procedure was performed to assess the difference between each pair of group means. For the dissimilar task, second graders produced significantly fewer correct referent choices than the sixth graders. None of the other comparisons were significant.

The results of an analysis of variance for the similar word-pair task indicated that neither grade level nor sex were significant factors. While older children were somewhat more effective in using comparison activities in a referential communication task than younger children, the difference was not significant ($F = 1.78$, $df = 4$, $p < .15$).

Additional correlational analysis of the data was performed in order to further examine the relationships among the factors of the study. The relationship between performance on the two communication tasks and the relation-

ship between I.Q. scores and communication accuracy on the two tasks were examined. The accuracy scores for the two word-pair tasks were significantly related, $r = .28$, $p = .02$. While the scores for the similar word-pair task were uncorrelated with I.Q. scores $r = .08$,ns, the scores for the dissimilar word-pair task were significantly related to I.Q. scores, $r = .34$, $p = .004$.

The relationship between I.Q. scores and accuracy scores for the dissimilar word-pair task was somewhat surprising. Previous research has consistently reported that I.Q. scores and communication accuracy are <u>not</u> significantly related (Glucksberg et al., 1975; Wigfield & Asher, 1978). As in previous research, I.Q. was not significantly related to performance on the similar word-pair task, but there was a positive relationship between I.Q. and performance on the dissimilar word-pair task. To clarify these findings an analysis of variance was applied to the data to determine the differential effect of high (i.e., I.Q. scores equal to or greater than the median of 105) vs. low (i.e., I.Q. scores less than 105) I.Q. groups across grades.

Table 3 presents the average accuracy scores for the high and low I.Q. groups for each grade level on the two referential word-pair tasks.

Insert Table 3 about here

On the analysis of dissimilar word-pair scores, both grade ($F = 4.3$, $df = 4$, $p < .004$) and I.Q. ($F = 17.5$, $df = 1$. $p < .001$) were significant main effects and the interactions of grade and I.Q. were also significant ($F = 2.6$, $df = 4$, $p < .05$). These findings indicated that the low I.Q. group made a lower number of correct responses than the high I.Q. group at each of the final grade levels tested. On the analysis of the similar word-pair scores neither grade level nor I.Q. were significant factors.

Discussion and Implications

Recent research in referential communication examines the skills that underlie effective communicative performance and focuses on the child's ability to meet the information processing demands of particular communication tasks. Studies of non-learning disabled children's communication accuracy find that the ability to effectively communicate referents involving comparison activities to a listener increases with age and that younger children are less aware of the need for comparison activity (Cohen & Klein, 1968; Asher & Parke, 1975).

The first research question posed in this study asked if the performance of learning disabled children on two word-pair tasks would differ from the performance reported for non-learning disabled children. On the dissimilar word-pair task requiring only sampling activities, the learning disabled children at all grade levels are effective in communicating

the dissimilar pair referents with only second graders formulating less accurate referent word choices than the sixth graders. In general, these findings are consistent with the results obtained in studies of non-learning disabled children (Asher & Parke, 1975). However, the results also indicate that some young learning disabled children may still lack the vocabulary or labeling strategies necessary for denoting referents even when the referent and non-referent are dissimilar. This finding is consistent with observations made in other studies where learning disabled children exhibited deficits in labeling or word knowledge (Denckla & Rudel, 1976; Noel, 1980).

Also, for the dissimilar word-pair task there is a difference in the performance of the two I.Q. groups with the high I.Q. group showing somewhat better performance. As the I.Q. test requires the same kind of vocabulary skills and sampling activities relevant to performance on the dissimilar word-pair task, this could account for the observed relationship between the two measures as well as the observed difference in response accuracy between the two I.Q. groups.

On the similar pairs requiring comparison activity, a cognitive strategy, the learning disabled children's performance was not compatible with the results of prior research with non-learning disabled children where younger children communicated less effectively than older children. While there was a trend to increase in accuracy as grade level increased, the learning disabled children's performance did not significantly improve

with age. An interesting finding was the overlap in performance between the second and third graders and the sixth graders. Based on prior research with non-learning disabled children, accuracy could be expected to increase significantly over age when the referent and non-referent are similar, however, this was not the case for the learning disabled group.

The second question posed in this study asked if metacognitive factors are implicated in the performance of learning disabled children on a referential communication task. The learning disabled children's poorer performance on the similar word-pair task which requires comparison activity, in contrast with their almost perfect performance on the dissimilar word-pair task which requires only sampling activity, suggests that metacognitive factors are implicated in learning disabled children's referential communication ability.

Whitehurst and Sonnenschein (1978) found children below the age of eight are often insensitive to referential context and characterized this as "contrast failure" to indicate that the child fails to contrast or compare the referent with the non-referent. The learning disabled children's poorer performance on the similar word-pair task may be in their failure to spontaneously appreciate when a referential communication task requires comparison processing.

The findings of the present investigation also suggest the possibility that learning disabled children may have a more general "production deficiency" which affects their

language performance and this may, in fact, account for the pervasiveness of the language deficits that characterize the performance of many learning disabled children (Wiig & Semel, 1980; Noel, 1980; Spedman, 1981). It is possible to speculate that the learning disabled child may seldom think of deliberately trying to prepare for or engage in specific cognitive activities for effective formulation or comprehension of linguistic messages in situations that commonly elicit precisely these sorts of cognitive efforts in their non-learning disabled peers.

This interpretation of the findings is consistent with research in areas other than language performance which also indicates that learning disabled children often fail to spontaneously access or apply appropriate cognitive competence (Tarver et al., 1976; Torgesen, 1979, 1980; Swanson, 1982). Therefore, an interesting prospect for future research involves the role that metacognitive factors play in the communicative competence of learning disabled children.

Given that learning disabled children do not adequately engage in comparison activity on a referential communication task, further research could consider other possible explanations. One possible explanation of inadequate comparison activity is that learning disabled children may realize the need to engage in comparison activity, but lack specific strategies for thinking of features or attributes which differentiate the referent from the non-referent (i.e., the need

to reject high associative responses in favor of less common responses). Another possibility is that they are aware that they need to delimit the referent, but do not take the time to do so. Many learning disabled children are typically more impulsive in response style (Ross, 1976; Bryan & Bryan, 1978) and may not take the time to engage in comparison activities.

Although the precise nature of the comparison processing deficit manifested by learning disabled children remains unclear, the present research suggests that metacognitive skills play a role in the referential communication performance of learning disabled children. Therefore, further examination of the cognitive processes underlying language performance may be helpful in broadening our understanding of the nature of the language deficits that characterize this special population. A better understanding of the factors that underlie language performance should also lead to the development of more effective procedures for the training of communication skills in learning disabled children.

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Table 1

Lists of Dissimilar and Similar Word Pairs

*Sample Word Pair: house - tomato

Dissimilar Word Pairs	Similar Word Pairs
wash - give	river - ocean
fur - add	plant - flower
big - hard	short - small
table - rest	write - print
carry - mountain	dish - plate
city - begin	mitten - glove
mad - move	world - earth
black - warm	say - tell
glass - pretty	rubbers - boots
long - clock	dog - puppy
dark - roll	ship - boat
music - hand	child - baby
run - bake	crayon - chalk
cold - tire	road - street
like - bird	sound - noise

*The referent in each pair is underlined.

Table 2

Mean Communication Accuracy Scores by Grade Level

	Dissimilar		Similar	
Grade	M	SD	M	SD
Second	13.2	1.76	7.4	2.2
Third	14.4	.99	8.2	2.4
Fourth	14.2	.94	9.1	2.9
Fifth	14.3	.87	8.8	1.3
Sixth	14.8	.39	10.0	2.9

Table 3

Mean Communication Accuracy Scores for High and Low I.Q. Groups

	Dissimilar		Similar	
Grade	Low I.Q.	High I.Q.	Low I.Q.	High I.Q.
2	12.00(6)*	14.50(6)	7.00(6)	7.83(6)
3	14.00(6)	14.83(6)	7.50(6)	8.83(6)
4	14.00(8)	14.50(4)	9.88(8)	7.50(4)
5	14.00(7)	14.60(5)	8.57(7)	9.00(5)
6	14.50(4)	15.00(8)	10.75(4)	9.63(8)

*Number of subjects in parenthesis.